

REMARKS

Claims 1-4, 8, 9, 11 and 12 are currently active.

Claims 1, 8, 9 and 11 have been amended.

Antecedent Support

Antecedent support for the amended language in Claims 1 and 11 "the detecting step is decoupled from the extending step" is found in the specification on page 16, lines 22-28 where the application states: "The method *decouples* several steps, including PCR amplification, robotic gridding, surface *DNA synthesis*, and *fluorescent scanning*." Further antecedent support for this amended claim language is found in the examples provided, where the extension step (e.g., page 23, line 15 through page 25, line 21) is entirely decoupled from the detection step (e.g., page 25, line 23 through page 25, line 27).

Moreover, on page 9, line 23 through page 10, line 3, the specification particularly differentiates applicant's invention from Cheeseman, pointing out that their method has an important "instrumentation constraint: the biochemical *synthesis* and the physical *detection* must be combined into a single complex DNA sequencing device." The invention provides a remedy to this limitation by "*decoupling* the two processes," which

permits "the use of simpler off-the-shelf instrumentation, and allows more parallelization at a lower cost."

Antecedent support for the amended language in Claim 8 "identify individuals" is found in the specification on page 43, lines 4-17 where the application states: "genotyping data can also be used to *identify individuals*. For example, in forensic science, DNA evidence can connect a suspect to the scene of a crime."

Antecedent support for the amended language in Claim 9 "compared" is found in the specification on page 49, lines 5-19 where the application states: "genetic markers are used to form a genetic fingerprint of an individual. These fingerprints can be *compared* to match a stain with an individual or database (e.g., to convict a criminal)."

35 USC Sect. 112, first paragraph

Claims 1-4, 8-9 and 11-12 were rejected by Examiner under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Claims 1 and 11 were amended to remove the unsupported language "or higher". Applicant respectfully submits that the invention as amended fully addresses and adequately overcomes examiner's objections, and requests that the claims now be allowed.

35 USC Sect. 112, second paragraph

Claims 1-4, 8-9 and 11-12 were rejected by Examiner under 35 U.S.C. 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 11 recited the limitation "detecting a total amount of label present in the collection to produce a measurement that is determined without performing a one or higher dimensional DNA size separation on the products" which examiner found to be vague and indefinite. First, there was ambiguity with the words "amount" and "measurement"; the word "amount" has been removed. Second, it was unclear what "without performing" was referring to; the claim was rewritten to clearly specify that the phrase refers to the detecting step. The amended claim step now states: "detecting a total label present in the collection to produce a measurement, where the detecting step is decoupled from the extending step and does not perform a DNA size separation on the products," which applicant respectfully submits clarifies the claim language.

Claim 8 recited the passive step "is used for criminal justice applications." The language has been replaced by the active method step of "is used to identify individuals." Applicant respectfully submits that this amendment clarifies the claim language.

Claim 9 recited the passive step "is used in conjunction with a DNA database." The language has been replaced by the active method step of "is compared with a DNA database." Applicant respectfully submits that this amendment clarifies the claim language.

Applicant respectfully submits that the invention as amended fully addresses and adequately overcomes examiner's objections, and requests that the claims now be allowed.

35 USC Sect. 102

Claims 1-4 and 11 were rejected by Examiner under 35 U.S.C. 102(b) as being anticipated by Cheeseman.

In applicant's specification, on page 9, line 23 through page 10, line 3, applicant notes "another gel-free approach is adding one base to a nascent DNA strand, detecting which base was added, and then repeating the process (synthesis + detection) until the sequence is determined (Cheeseman)." Applicant further notes here that this "potentially powerful method suffers from an instrumentation constraint: the biochemical synthesis and the physical detection must be combined into a single complex DNA sequencing device.

Decoupling the two processes might permit the use of simpler off-the-shelf instrumentation, and allow more parallelization at a lower cost."

Claims 1 and 11 have been amended to clearly specify this novel "decoupling" feature of applicant's invention. The amended Claim 1, step c now recites "detecting a total label present in the collection to produce a measurement, *where the detecting step is decoupled from the extending step* and does not perform a DNA size separation on the products." Antecedent support in the specification has been provided for this amendment. Cheeseman's method requires that DNA extension and label detection be coupled at every step. Moreover, this coupling is inherent to Cheeseman's invention, since successful base addition synthesis sequencing entirely depends on detecting the new extension products after each new base has been added. Applicant's invention, as amended, decouples these extension and detection steps, and is therefore novel with respect to Cheeseman's inherently coupled approach.

35 USC Sect. 103

Claims 8, 9 and 12 were rejected by Examiner under 35 U.S.C. 103(a) as being unpatentable over Cheeseman as applied to claims 1-4 and 11 taken in view of Schumm et al.

To Cheeseman's coupled extension and detection steps for DNA sequencing, Schumm et al. add the application of identifying people by typing polymorphic DNA loci. However, this referenced prior art combination of Cheeseman and Schumm et al. necessarily includes a DNA sequencing step. For this sequencing operation, Cheeseman uses a coupled DNA extension and detection step, whereas Schumm et al. uses a DNA size separation step.

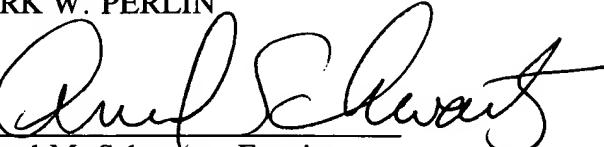
Applicant's invention, as amended, is distinguished from this prior art that uses these DNA sequencing methods. Applicant's amended invention includes the novel step (c) in amended claims 1 and 11 for "detecting a total label ... where the *detecting step is decoupled from the extending step and does not perform a DNA size separation on the products.*" The prior art electrophoretic methodology employed by Cheeseman couples the extending and detecting steps. The prior art electrophoretic methodology employed by Schumm et al. performs a size separation. The instant invention, as amended, is distinguished from this prior art in that no such DNA sequencing method is ever performed, and, indeed, such a coupling (Cheeseman) or size separation (Schumm et al.) step is specifically excluded from the invention by the amended claim language of step (c). Therefore, the invention, as amended, is distinguished from the cited prior art combination of Cheeseman and Schumm et al.

Applicant respectfully submits that the invention as amended fully addresses and adequately overcomes examiner's objections, and requests that the claims now be allowed.

In view of the foregoing amendments and remarks, it is respectfully requested that the outstanding rejections and objections to this application be reconsidered and withdrawn, and Claims 1-4, 8, 9, 11 and 12, now in this application be allowed

Respectfully submitted,

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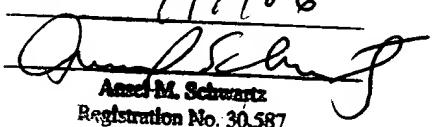
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